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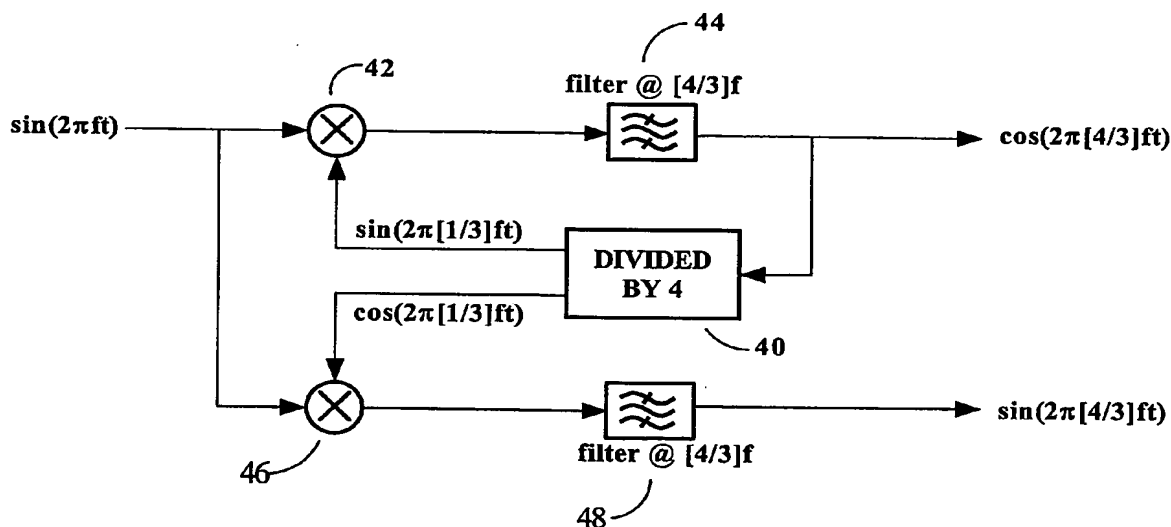
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(54) Title: REGENERATIVE DIVIDER FOR UP AND DOWN CONVERSION OF RADIO FREQUENCY (RF) SIGNALS



(57) Abstract: The present invention relates generally to communications, and more specifically to a method and apparatus for generating local oscillator signals used for up- and down-conversion of RF (radio frequency) signals. A major problem in the design of modulators and demodulators, if the leakage of local oscillator (LO) signals into the received signal path. The invention presents a number of highly integratable circuits which resolve the LO leakage problem, using regenerative divider circuits acting on oscillator signals which are running at a multiple or fraction of the frequency of the desired LO signal, to generate in-phase (I) and quadrature (Q) mixing signals. Embodiments of these circuits also use harmonic subtraction and polyphase mixers, as well as virtual local oscillator TM (VLO) mixing signals. VLO mixing signals are signal pairs which emulate local oscillator signals by means of complementary mono-tonal and multi-tonal mixing signals.

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